IEEE P802.11
Wireless LANs

|  |
| --- |
| 802.11IEEE P802.11REVme/D3.0 Mandatory Draft Review (MDR) Report |
| Date: 2023-07-11 |
| Author(s): |
| Name | Company | Address | Phone | email |
| Robert Stacey | Intel |  |  | robert.stacey@intel.com |
| Emily Qi | Intel |  |  |  |
| Edward Au | Huawei |  |  |  |
| Roy Want | Google |  |  |  |
| Carol Ansley | Cox |  |  |  |
| Claudio da Silva | Meta |  |  |  |
| Yongho Seok | MediaTek |  |  |  |

**Abstract**

This document contains the report of the REVme Mandatory Draft Review.

r0: section headings.

R1: volunteer names added

R2: ANA check

R3: Unicast/multicast (Roy Want). First batch of Edward’s findings.

R4: Added Carol’s findings.

R5: Added Emily’s findings.

R6: Added Claudio’s findings and MEC report.

R7: Comments from telecon review.

R8: Additional findings from Edward.

R9: Provided TGme Editor’s recommendations, see [TGme Editor].

R10: Yongho’s input on MIB.

R11: Joeseph’s input on set to. Highlighted editor actions. Unhighlighted everything else.

R12: Updates from 11 July Editors meeting.

R13: Provided TGme Editor’s recommendations, see [TGme Editor P2].

# Introduction

## Purpose of this document

This document is the report from the group of volunteers that participated in the P802.11REVme/D3.0 mandatory draft review.

This document contains recommendations for changes to the P802.11REVme draft to bring it into improved compliance to IEEE-SA and WG11 style.

The recommended changes need to be reviewed by TGme and approved, or ownership of the issues taken by TGme.

## Process / references

The MDR process is described in:

* [11-11/615r6](https://mentor.ieee.org/802.11/dcn/11/11-11-0615-06-0000-wg802-11-mec-process.doc) – WG802.11 MEC Process

And references:

* [11-09/1034r20](https://mentor.ieee.org/802.11/dcn/09/11-09-1034-20-0000-802-11-editorial-style-guide.docx) – 802.11 Editorial Style Guide

A setup meeting will be held with and review topics assigned to volunteers. The review comments from the volunteers will be compiled into this document.

## Acknowledgements

The 802.11 technical editor (Robert Stacey) gratefully acknowledges the work and contribution of:

* Claudio da Silva
* Carol Ansley
* Emily Qi
* Edward Au
* Joseph Levy
* Roy Want
* Brian Hart
* Yongho Seok

# Findings

## Style

### Style Gude 2.1 – Frames

### Style Guide 2.1.1 – Frame Format Figures

Claudio

11ay amendment introduced a number of “Variable”s into the standard (change “Variable” to “variable”): Page 1401, line 17; page 1421, line 27; page 1436, line 14; page 1444, lines 23 and 60; page 1463, line 19, and a few others.

[Robert: OK. Change for consistency.]

[TGme Editor] change as suggested.

11ay amendment introduced a number of figures with bit label positions that are not properly justified: page 675, line 48; page 676, line 48; page 678, lines 33, 46, 56; and a few others.

[Robert: OK. At editors discretion.]

[TGme Editor] No change. Editor tried to align them before.

Page 603, line 22: The bit position should always start with B0.

[Robert: agree. Might want to check that there are no references to absolute bit positions, e.g., B1]

Action: No change to draft. Bring as future comment.

[TGme Editor] No change. – Assigned to Emily to bring a comment in SB.

Page 605, line 29: Thickness rows/columns is not correct

[Robert: at the editor’s discretion]

[TGme Editor] change as suggested.

Page 615, line 51: Title could possibly be written in 1 line

[Robert: at the editor’s discretion]

[TGme Editor] No change. It cannot be fitted in 1 line.

Page 632, lines 39 and 56 and page 633, lines 9, and 24: Thickness rows/columns is not correct

[Robert: at the editor’s discretion]

[TGme Editor] change as suggested.

Page 642, line 46 and page 649, line 22: Repeating fields should be avoided. Arrows should not be used. Suggest creating a container field with “List” in the name.

[Robert: agree but since this is legacy text we might change through comment resolution process]

Action: Resolve through comment resolution process.

[TGme Editor] No change. – Assigned to Emily to bring a comment in SB.

Page 669, lines 33 and 52: The bit position should always start with B0. Justification of bit labels is also incorrect.

[Robert: agree]

Action: Fix both figures.

[TGme Editor] change as suggested.

Page 674, line 12: Bit labels missing

[Robert: agree]

Page 739, line 54 and page 740, line 10: Text in between two parts of the figure

[Robert: should fix]

Action: fix.

[TGme Editor] change as suggested.

Page 740, line 28: Inconsistent thickness rows/colums

[Robert: at the editor’s discretion]

[TGme Editor] change as suggested.

Page 748, line 51: Number of bits line is missing

[Robert: agree]

[TGme Editor] change as suggested.

Page 906, line 25: “Data field format of the Measurement Configuration subelement format” (confirm)

[Robert: It is the format of the Data field that is defined, so “Data field format of the Measurement Configuration subelement”]

Page 907, line 25: “Data field format of the Extended Measurement Configuration subelement format” (confirm)

[Robert: It is the format of the Data field that is defined, so “Data field format of the Extended Measurement Configuration subelement"]

[TGme Editor] change as suggested.

Page 957, line 44: “Data field format of the Measurement Configuration subelement format” (confirm)

[Robert: It is the format of the Data field that is defined, so “Data field format of the Measurement Configuration sublement”]

Action: Fix previous 3 issues as suggested.

TGme Editor] change as suggested.

Page 1072, line 60: Wrong bit labelling (B2-B7)

[Robert: I think you mean use of dash instead of space. At the editor’s discretion.]

Page 1104, line 24: n and m should be in italic

TGme Editor] change as suggested.

Page 1248, line 28: Thickness of inner columns is not correct

TGme Editor] change as suggested.

Page 1282, line 54: Thickness of inner columns is not correct

TGme Editor] change as suggested.

Page 1283, line 10: Thickness of inner columns is not correct

TGme Editor] change as suggested.

Page 1411, line 62: Bit labels missing

TGme Editor] change as suggested.

Page 1427, line 53: Bit labels missing

TGme Editor] change as suggested.

Page 1475, line 36: (1) Variable -> variable; (2) Is “from WUR AP” needed/clear? Replace with “when/if sent by an WUR AP”?

[Robert: change to “WUR Parameters field format if sent by a WUR AP”]

Action: correct as suggested

TGme Editor] change as suggested.

Page 1478, line 6: Is “from WUR non-AP STA” needed/clear? Replace with “when/if sent by an WUR non-AP STA”?

[Robert: Change to “WUR Parameters field format if sent by a WUR non-AP STA”]

Action: correct as suggested

TGme Editor] change as suggested.

Page 1756, line 58: (1) “format” missing; (2) Is “of WUR Wake-up frame” needed?

[Robert: change to “Type Dependent Control field format” (delete frame reference)]

Action: correct as suggested.

TGme Editor] change as suggested.

Page 1758, line 39: Field -> field

[Robert: agree]

Action: as suggested.

[TGme Editor] change as suggested.

### Style Guide 2.1.2 – Naming Frames

Claudio

On-going. Did not identify any issues so far.

### Style Guide 2.2 – true/false

Carol

P506, L31, should be “true, false”

P509, L6, should be “true, false”

[Robert: agree, lowercase 2x]

Action: change as suggested.

[TGme Editor] change as suggested.

### Style Guide 2.3 – “is set to”

Joseph

There are multiple location where "is set to" is used to refer to the value of a field, element, or sub-element that is being tested. The 802.11 editorial style guide states that such a test should use "is equal to" or “is” and not "is set to". The following changes use the simpler form “is” and not the more verbose “is equal to”.

[TGme Editor P2] Change as suggested in this section (subject to further review by the editors).

Make the following changes at the following location (page.line):

1842.1 - replace "is set to" with "is"

1881.57 - replace "is set to" with "is" and replace "contained a value of 1" with "are 1"

1881.61 - replace "is set to" with "is" and replace "contained a value of 1" with "are 1"

1882.1 - replace "is set to" with "is" and replace "contained a value of 1" with "are 1"

1882.4 - replace "is set to" with "is" and replace "contained a value of 1" with "are 1"

1882.60 - replace "is set to" with "is" and replace "is equal to 1" with "is 1"

1883.1 - replace "is set to" with "is" and replace "is equal to 1" with "is 1"

1883.5 - replace "is set to" with "is" and replace "is equal to 1" with "is 1"

1883.8 - replace "is set to" with "is" and replace "is equal to 1" with "is 1"

1911.11 – reword “If the Duration field in a frame carried in an HE TB PPDU is set to 0, the HE TB PPDU shall not include any frames that solicit a control response frame from the AP.” to be: "An HE TB PPDU carrying a frame with a Duration field equal to 0 shall not include any frames that solicit a control response frame from the AP." Editorial note it may be clearer to replace "a frame" with "an MPDU" and "frames" with "MPDUs"..

1925.12 – reword: “All ACs with priority higher than that of an AC for which the ACM subfield is set to 1 should have the ACM subfield set to 1.“ to be: "All ACs with priority higher than an AC for which the ACM subfield is 1 should set the ACM subfield to 1."
Note: Question is this really a “should” or would “shall” be better.

Action (Joseph): submit this one as a comment

[TGme Editor P2] No change for this item. Assigned this item to Joseph to submit a comment in SB.

1930.61 - replace "is set to" with "is"

1950.51 - replace "When the Block Ack Policy subfield value is set to 1 by the originator of an ADDBA Request frame between HT STAs, then the ADDBA Response frame accepting the ADDBA Request frame shall contain 1 in the Block Ack Policy subfield." with "When the Block Ack Policy subfield value is 1 in an ADDBA Request frame, the responding HT STA shall set the Block Ack Policy subfield to 1 in the ADDBA Response frame accepting the ADDBA Request frame.

1951. 64 - replace "is set to" with "is"

1952.33 - replace "if the MPDU Modulo subfield is set to a value greater than 9; in this case,” with “, if the MPDU Modulo subfield is grater than 9”

2045.34 – replace “— APEP\_LENGTH set to 0 if AGGREGATION is set to AGGREGATED” with “— APEP\_LENGTH is set to 0 if AGGREGATION is AGGREGATED”

2045.36 – replace “— PSDU\_LENGTH set to 0 if AGGREGATION is set to NOT\_AGGREGATED” with “— PSDU\_LENGTH is set to 0 if AGGREGATION is NOT\_AGGREGATED”

2155.39 - replace "is set to” with "is”

2192.13 – replace “is set to” with “is”

2192.16 - replace "is set to a nonzero value" with "is a nonzero value"

2192.55 - replace ""is set to 0" with "is 0”

2192.58 - replace "is set to a nonzero value" with "is a nonzero value"

2195.48 - replace ""is set to 0" with "is 0”

2195.50 - replace "is set to a nonzero value" with "is a nonzero value"

2201.29 - replace ""is set to 0" with "is 0”

2203.59 - replace "is set to a value larger" with "is a value larger"

2210.59 - replace ""is set to 0" with "is 0”

2201.29 – replace “is set to” with “is”

2210.61 - replace "If the ComeBack Delay field is set to a nonzero value,” with: "If the ComeBack Delay field is a nonzero value,”

2265.6 - replace "is set to 0" with "is 0”

2280.14 – replace: “When management frame protection is not negotiated or the Extended S1G Action Protection field in the RSNXE transmitted by either STA is set to 0,“ with: “When management frame protection is not negotiated or the Extended S1G Action Protection field is 0 in the RSNXE transmitted by either STA,”

2290.44 – replace “is set to 1” with “is 1”

2293.20 – replace: “When management frame protection is not negotiated or the Extended S1G Action Protection field in the RSNXE transmitted by either STA is set to 0,” with: : “When management frame protection is not negotiated or the Extended S1G Action Protection field is 0 in the RSNXE transmitted by either STA,”

2295.1 – replace: “— The switching from an omnidirectional beam transmission to a sectorized beam transmission occurs when the bit position corresponding to the sector is set to 1 in the TXVECTOR parameter SECTOR\_ID.”

With: “— The switching from an omnidirectional beam transmission to a sectorized beam transmission occurs when the bit position corresponding to the sector is 1 in the TXVECTOR parameter SECTOR\_ID.”

2450.8 – replace: “The default value is set to 10 TUs.” with: “The defaule value is 10 TUs.”

2450.9 – replace: “The default value is set to 8 beacon intervals.” with: “The default value is 8 beacon intervals.”

2450.12 – replace: “The default value is set to 256 beacon intervals.” with: “The default value is 256 beacon intervals.”

2584.20 - replace "is set to 0" with "is 0"

2584.20 - replace " is set to 1" with "is 1"

2585.53 - replace " is set to 1" with "is 1"

2589.25 - replace "When the ASAP subfield is set to 0 by a responding STA, …” with "When the received ASAP subfield is 0, …”

2589.29 – replace “When the ASAP subfield is set to 1 by a responding STA, …” with “When the received ASAP subfield is 1, …”

2609.6 - replace "is set to" with "is"

2629.60 - replace "is set to true" with "is true"

2688.16 - replace " is set to" with "is"

2753.55 - replace "is set to" with "is"

2753.56 - replace "is set to" with "is"

2764.45 – replace: “When management frame protection is not negotiated or the Extended S1G Action Protection field in the RSNXE transmitted by either STA is set to 0,“ with: “When management frame protection is not negotiated or the Extended S1G Action Protection field is 0 in the RSNXE transmitted by either STA,”

2779.13 - replace "is set to 0" with "is 0"

2790.23 - replace “is set to” with “is”

2989.47 - replace "is set to" with "is"

3026.33 - replace "is set to" with "is"

3055.14 - replace "is set to" with "is"

3102.34 - replace "is set to" with "is"

3102.38 - replace "is set to" with "is"

3105.7 - replace "When dot11MeshDelayedBeaconTxInterval is set to nonzero value,” with “When dot11MeshDelayedBeaconTxInterval is a nonzero value,”

3107.8 – replace “When the Power Management subfield in the Frame Control field is set to 1,” with “When the Power Management subfield in the Frame Control field is 1,”

3107.10 – replace “When the Power Management subfield in the Frame Control field is set to 0,” with “When the Power Management subfield in the Frame Control field is 0,”

3111.23 - replace "is set to" with "is"

3350.65 - replace "If the SCRAMBLER\_RESET parameter is set to RESET\_SCRAMBLER,” with "If the SCRAMBLER\_RESET parameter is RESET\_SCRAMBLER,”

3358.24 – replace “If this field is set to 1,” with “If this field is 1,”

3359.2 - replace "is set to" with "is"

3395.57 - replace "is set to" with "is"

3402.35 - replace "is set to" with "is" (for both occurrences in the line)

3526.26 - replace "is set to" with "is"

3616.29 - replace "is set to" with "is”

3623.22 - replace "is set to" with "is”

3624.33 - replace "is set to" with "is”

3630.27 - replace "is set to" with "is”

3630.32 - replace "is set to" with "is”

3651.8 - replace "is set to" with "is”

3651.9 - replace "is set to" with "is”

3651.31 - replace "is set to" with "is”

3651.33 - replace "is set to" with "is”

3703.47 - replace “is set to” with “is”

4032.28 - replace "is set to" with "is"

4244.5 - replace "if the CHANNEL\_AGGREGATION parameter is set to AGGREGATE," with "if the CHANNEL\_AGGREGATION parameter is AGGREGATE,"

4244.15 - replace "if the CHANNEL\_AGGREGATION parameter is set to AGGREGATE," with "if the CHANNEL\_AGGREGATION parameter is AGGREGATE,"

4262.48 - replace "is set to" with "is"

4262.56 - replace "is set to" with "is"

4262.58 - replace "is set to either" with "is either"

4262.60 - replace "is set to the" with "is"

4263.39 - replace "is set to the" with "is"

4263.42 - replace "is set to" with "is"

4263.42 - replace "is set to either" with "is either"

4263.48 - replace "is set to the" with "is"

4263.51 - replace "is set to" with "is"

4263.58 - replace "is set to 1" with "is 1"

4263.61 - replace "is set to 0" with "is 0"

4281.29 - replace "is set to 1" with "is 1"

4281.31 - replace "is set to 0" with "is 0"

4282.35 - replace "is set to 1" with "is 1"

4285.32 - replace "is set to 1" with "is 1"

4286.9 - replace "is set to 0" with "is 0"

4286.14 - replace "is set to 1" with "is 1"

4286.31 - replace "is set to 1" with "is 1"

4293.16 - replace "is set to 1" with "is 1"

4314.44 - replace "is set to" with "is"

4315.54 - replace "is set to" with "is"

4315.59 - replace "is set to" with "is"

4316.11 - replace "is set to 0" with "is 0"

4316.13 - replace "is set to 1" with "is 1"

4318.11 - replace "is set to" with "is"

4318.15 - replace "is set to" with "is"

4322.29 - replace "is set to" with "is"

4391.5 - replace "is set to" with "is"

4391.9 - replace "is set to" with "is"

4391.15 - replace "is set to" with "is"

4391.16 - replace "is set to" with "is"

4391.17 - replace "is set to" with "is"

4391.23 - replace "is set to" with "is"

4391.28 - replace "is set to" with "is"

4432.38 - replace "is set to" with "is"

4433.37 - replace "is set to" with "is"

4434.62 - replace "is set to" with "is"

4435.8 - replace "is set to" with "is"

4435.11 - replace "is set to" with "is"

4435.54 - replace "is set to" with "is"

4437.1 - replace "is set to" with "is"

4437.12 - replace "is set to" with "is"

4437.33 - replace "is set to" with "is"

4437.48 - replace "is set to" with "is"

4548.45 - replace "is set to" with "is"

Note: these proposed changes provide a change only where “is set to” is used in a “test” (~124 instances), there are a total of 2790 uses of “is set to” in the draft.

Action: as suggested (subject to further review by the editors)

[TGme Editor P2] Change as suggested in this section (subject to further review by the editors).

### Style Guide 2.4 – Information Elements/Subelements

#### Style Guide 2.4.1 – Information Elements/subelements – Naming

#### Emily

No findings

#### Style Guide 2.4.2 – Definition Conventions

Emily

1414.21, there is no Channel Allocation field in figure 9-923. In figure 9-923, Channel Allocation 1 to Channel Allocation N fields are defined.

At 1414.21, change “Each Channel Allocation field starts with …” to “Each Channel Allocation *i* field (1 ≤ *i* ≤ N) starts with …”

[Robert: OK]

Action: as suggested.

[TGme Editor] change as suggested.

1512.3, change “The format of a Credential Types Tuple subfield” to “The format of the Credential Types Tuple subfield”.

[Robert: definite article OK. Consider also using “defined” instead of “shown”; the figure is the format definition.]

Action: as suggested.

[TGme Editor] change as suggested.

#### Style Guide 2.4.3 – Element Inclusion Conventions

Emily

1421.51: do not list the frames that carry the element as part of element definition.

Delete “ The EDMG Group ID Set element is transmitted in DMG Beacon frames, Announce frames or MIMO BF Selection frames.”

[Robert: agree]

Action: as suggested

1474.49, change “NOTE” to “NOTE 1”.

1474.62, change “NOTE” to “NOTE 2”.

1106.30, delete “ The FMS Request element is included in FMS Request frames, as described in 9.6.13.11 (FMS Request frame format).”

[Robert: agree]

Action: as suggested

1109.4, delete “The FMS Response element is included in FMS Response frames, as described in 9.6.13.12 (FMS Response frame format).”

[Robert: agree]

Action: as suggested

1110.19, delete “The QoS Traffic Capability element is included in Beacon frames, as described in 9.3.3.2 (Beacon frame format); Probe Response frames, as described in 9.3.3.10 (Probe Response frame format); Association Request frames, as described in 9.3.3.5 (Association Request frame format); and Reassociation Request frames, as described in 9.3.3.7 (Reassociation Request frame format).”

[Robert: agree]

Action: as suggested

1113.24, delete “The TFS Request element is included in TFS Request frames, as described in 9.6.13.15 (TFS Request frame format), and WNM Sleep Mode Request frames, as described in 9.6.13.19 (WNM Sleep Mode Request frame format).”

[Robert: agree]

Action: as suggested

1114.55, delete “The TFS Response element is included in TFS Response frames, as described in 9.6.13.16 (TFS Response frame format), and WNM Sleep Mode Response frames, as described in 9.6.13.20 (WNM Sleep Mode Response frame format).”

1116.7, delete “The WNM Sleep Mode element is included in WNM Sleep Mode Request frames, as described in 9.6.13.19 (WNM Sleep Mode Request frame format), and WNM Sleep Mode Response frames, as described in 9.6.13.20 (WNM Sleep Mode Response frame format).”.

1116.35, delete: “The TIM Broadcast Request element is included in TIM Broadcast Request frames, as described in 9.6.13.21 (TIM Broadcast Request frame format); Association Request frames, as described in 9.3.3.5 (Association Request frame format); and Reassociation Request frames, as described in 9.3.3.7(Reassociation Request frame format).”.

Action: as suggested

1117.39, delete: “The TIM Broadcast Response element is included in TIM Broadcast Response frames, as described in 9.6.13.22 (TIM Broadcast Response frame format); Association Response frames, as described in 9.3.3.6 (Association Response frame format); and Reassociation Response frames, as described in 9.3.3.8 (Reassociation Response frame format).”.

Action: as suggested

1120.33, delete: “The Channel Usage element can be included in Probe Request frames, as described in 9.3.3.9 (Probe Request frame format); Probe Response frames, as described in 9.3.3.10 (Probe Response frame format); Channel Usage Request frames, as described in 9.6.13.24 (Channel Usage Request frame format); andChannel Usage Response frames, as described in 9.6.13.25 (Channel Usage Response frame format).”

Action: as suggested

[TGme Editor] Accept all proposed changes in this section.

### Style Guide 2.5 – Removal of functions and features

Edward

As per Section 2.5 of the IEEE 802.11 editorial guideline, “Functions and features described in the published 802.11 standard shall not be removed unless they have been marked “obsolete and subject to removal in a subsequent revision of this standard.” in a previous revision.”.

[01] The use of the dual beacon mechanism was marked “obsolete” in IEEE 802.11-2020. Please remove all the materials related to the dual beacon mechanism from REVme.

[02] The use of the dual CTS protection mechanism was marked “obsolete” in IEEE 802.11-2020. Please remove all the materials related to the dual CTS protection mechanism from REVme.

[03] The use of RIFS for a non-DMG STA was marked “obsolete” in IEEE 802.11-2020. Please remove all the materials related to the use of RIFS for a non-DMG STA from REVme.

[04] The DMG low-power SC mode was marked “obsolete” in IEEE 802.11-2020. Please remove all the materials related to the DM low-power SC mode from REVme.

[05] The CDMG low-power SC mode was marked “obsolete” in IEEE 802.11-2020. Please remove all the materials related to the CDM low-power SC mode from REVme.

[Robert: The requirement is for notice, not for timely removal. I suggest we do this through comment resolution]

Action: Do not remove now; do through comment resolution.

[TGme Editor] No change in this section review.

### Style Guide 2.6 – Capitalization

Edward

[TGme Editor] Accept all proposed changes in this section.

[01] Figure 10-140: Replace “DTIM Beacon frame” with “DTIM beacon”.

[02] 3037.1: Replace “peering Management frame body” with “peering management frame body”.

[03] 3037.10: Replace “peering Management frame body” with “peering management frame body”.

[Robert: I need to catch up. Did we decide that Management frame (generic reference) is uncapitalized? Ditto for Data frame, Control frame?]

[04] 4787.6: Replace “Protected mesh peering Management frame processing” with “Protected mesh peering Management frame processing”.

[05] 5492.43: Replace “QoS Management Frame functionality” with “QoS management frame functionality”

[06] 910.54: Replace “The Subelement IDs for subelements in the Fine Timing Measurement Range request” with “The subelement IDs for subelements in the Fine Timing Measurement Range Request element”

[07] 947.46: Replace “The Subelement ID is equal” with “The Subelement ID field is equal”.

[08] 1127.25: Replace “The U-APSD coexistence element provides” with “The U-APSD Coexistence element provides”.

[09] Figure 9-1174: Replace “Transmit Power Envelope element (optional)” with “Transmit Power Envelope Element (optional)”.

[10] 2371.13: Replace “NDP Feedback Report Parameter set element” with “NDP Feedback Report Parameter Set element”.

[11] 2504.59: Replace “Measurement request element” with “Measurement Request element”.

[12] 869.49: Replace “The Requested Element IDs are” with “The Requested Element IDs field are”.

[13] 869.50: Replace “The Requested Element IDs are” with “The Requested Element IDs field are”.

[14] 869.51: Replace “The Requested Element IDs are” with “The Requested Element IDs field are”.

[15] 869.54: Replace “A given element ID is included at most once among the Requested Element IDs” with “A given element ID is included at most once among the Requested Element IDs field”.

[Robert: also “among” -> “in”]

Action: as suggested.

[16] 870.21: Replace “The Requested Element ID field contains one of the Element IDs used to indicate an extended element” with “The Requested Element ID field contains one of the element IDs used to indicate an extended element”.

[Robert: error in field name; should be “Requested Element IDs field”]

Action: Emily to check. Likely as suggested.

[Emily]: at 870.21, it is “The Requested Element ID field”, not “s”. The reviewer is correct.

[17] 955.8: Replace “The Subelement ID is equal to” with “The Subelement ID field is equal to”.

[18] 1356.16: Replace “Element ID values are in increasing order” with “Element ID subfield values are in increasing order”.

[19] 1356.32: Replace “Element ID Extension values are in increasing order” with “Element ID Extension subfield values are in increasing order”.

[20] 1356.34: Replace “have an Element ID value of 255” with “have an element ID value of 255”.

[21] 2351.1 to 2351.13: Replace “Element ID (Extension)” with “element ID (extension)”.

[22] 3103.54: Replace “A mesh STA may set the Status Code” with “A mesh STA may set the Status Code field”.

[23] 4904.22: Replace “This attribute holds the most recently transmitted Status Code” with “This attribute holds the most recently transmitted Status Code field”.

[Robert: “…recently transmitted Status Code field value”]

[23] 4910.34: Replace “This attribute holds the most recently transmitted Status Code” with “This attribute holds the most recently transmitted Status Code field”.

[24] 4911.24: Replace “This attribute holds the most recently transmitted Status Code” with “This attribute holds the most recently transmitted Status Code field”.

[25] 1570.40: Replace “the Status Code is REQUEST\_DECLINED” with “the Status Code field is REQUEST\_DECLINED”.

[26] 938.17: Replace “STA Floor Number values” with “STA Floor Number field values”.

[27] 2084.51: Replace “is Poll transmission” with “is poll transmission”.

[28] 1164.34: Replace “The EDCA Access Factor is expressed as” with “The EDCA Access Factor field is expressed as”.

[29] 1164.34: Replace “When the EDCA Access Factor is greater than” with “When the EDCA Access Factor field value is greater than”.

[30] 4581.47: Replace “The WUR PN Update procedure” with “The WUR PN update procedure”.

[31] 1135.14: Replace “The Alert Identifier Hash (AIH) contains” with “The Alert Identifier Hash field contains”. Note that I delete “(AIH)” because abbreviation is not allowed for a field’s name.

[32] 2649.59: Replace “The Emergency Alert Identifier element provides an Alert Identifier Hash value,” with “The Emergency Alert Identifier element provides an Alert Identifier Hash field value,”.

[33] 2649.60: Replace “The Alert Identifier Hash value allows” with “The Alert Identifier Hash field value allows”.

[34] 2650.10: Replace “The Alert Identifier Hash in the Emergency Alert Identifier element” with “The Alert Identifier Hash field in the Emergency Alert Identifier element”.

[35] 2650.14: Replace “After receiving an Alert Identifier Hash value” with “After receiving an Alert Identifier Hash field value”.

[36] 2650.17: Replace “transmit the Alert Identifier Hash of the desired message” with “transmit the Alert Identifier Hash field of the desired message”.

[37] 2650.26: Replace “the hexadecimal numerals of the Alert Identifier Hash” with “the hexadecimal numerals of the Alert Identifier Hash field”.

[TGme Editor] Accept all proposed changes in this section.

### Style Guide 2.7 – Terminology: frame vs packet vs PPDU vs MPDU

Edward

No issues identified.

### Style Guide 2.8 – Use of verbs & problematic words

[Volunteer name]

#### normative, non-normative, ensure

#### [TGme Editor] Accept all proposed changes in this section.

#### Carol

(Mark Rison has done a substantial amount of review on this topic)

**May**

P190, L56, “In an implementation, a single logical portal function ~~may~~ can be provided”

[Robert: I think “might is a better substitute in most cases (can = ability to do action; might = possibility of action). Change to “…a single portal function might be provided”]

P203, L63, “A power management mode of an associated station (STA) in which an access point (AP) ~~may~~ can transmit physical layer (PHY) protocol data units (PPDUs) to an associated STA at any time.

[Robert: “may” -> “might”]

Action: change “may” to “might”

P204, L1, “it is a mesh power management mode in which a neighbor peer mesh STA ~~may~~ can transmit PPDUs to the mesh STA at any time.”

Action: change “may” to “might”

P345, L9, “NOTE—In implementations, the (#1429)DA address filtering function ~~may~~ can be done “lower in the stack.””

Action: change “may” to “might”

P2379, L11, “NOTE 3—A STA ~~may~~ can use both WNM sleep mode and PS mode simultaneously.”

Action: change “may” to “might”

P2417, L33, “NOTE 1—A DMG STA in doze state ~~may need to~~ can perform beamforming to restore its links with other DMG STAs as needed.”

[Robert: “may need to” -> “might need to” (no “as needed”)]

Action: change “may” to “might”

P2421, L18, “NOTE 2—A DMG STA in doze state ~~may need to~~ can perform beamforming to restore its links with other DMG STAs as needed.”

Action: change “may” to “might”

P2421, L56, “NOTE 2—The PCP ~~may need to~~ can behave as if it is in active mode or in an A-BI to some associated STAs for a number of planned successive PCP D-BIs if it has not been able to confirm the reception of its WS by each associated STA, and it has not transmitted its WS through DMG Beacon or Announce frames over dot11MaxLostBeacons successive beacon intervals.”

[Robert: “may need to behave as it is” -> “might need to behave as if it is”]

Action: Change as suggested by Robert.

P2427, L50, **“**However, GLK STAs that find PS mode useful ~~may~~ can utilize PS mode while performing behaviors in this subclause.”

Action: change “may” to “might”

\*check P2738, L6, seems to be an incorrect link “(see (NOTE-For operating mode…))”

P3874, L48, “NOTE 6—The frame type of MPDUs ~~may~~ can be different across A-MPDUs within the same HE TB PPDU subject to A-MPDU context.”

Action: change “may” to “might”

**"Will” should not be used**

P173, L6, “that ~~will~~ can statically support”

[Robert: “can” is appropriate here since it refers to ability]

Action: as suggested.

P521, L24, “a non-AP STA ~~will have~~ complete~~d~~s the network selection process”

Action: as suggested.

P597, L2, “In group addressed mesh Data frames, the Mesh Power Save Level subfield is set to 0 to indicate that none of the peer-specific mesh power management modes of the mesh STA ~~will be~~ are deep sleep mode.”

Action: as suggested.

P609, L56,

“)The CMMG NDP Announcement subfield of the CMMG variant HT Control field indicates a CMMG NDP ~~will~~ may be transmitted (according to the rules described in 10.32 (CMMG beamforming)). It is set to 1 to indicate that an NDP follows; otherwise, it is set to 0.”

Action: no change; resolve through comment resolution process.

P869, L52, “The Requested Element IDs within a Request element transmitted in an Information Request frame do not include an element ID that corresponds to an element ~~that will be~~ to be included in the Information Response frame even in the absence of the Request element”

Action: as suggested.

P869, L58, “Some implementations might unnecessarily include in a Probe Request frame a Request element that contains the element ID of an element ~~that will be~~ to be included in the Probe Response frame”

Action: as suggested.

P870, L28, “The requested elements within an Extended Request element transmitted in a Probe Request frame do not identify ~~an~~ elements ~~that will be~~ included in the Probe Response frame even in the absence of the Request element, or ~~will be~~ excluded from the Probe Response frame even in the presence of the Extended Request element as described by the notes in Table 9-67 (Probe Response frame body). The requested elements within an Extended Request element transmitted in an Information Request frame do not identify ~~an~~ elements ~~that will be~~ included in the Information Response frame even in the absence of the Extended Request element,"

Action: as suggested.

P980, L27,

“NOTE—A STA need not insert a PMKID in the PMKID List field if the STA ~~will not be~~ is not using that PMKSA.”

Action: as suggested.

P1130, L59,

“If the Query Response Length Limit field is larger than the maximum MMPDU size, the Query Response ~~will~~ spans multiple MMPDUs”

Action: as suggested.

P1131, L13,

: “When this field contains a vendor-specific advertisement protocol ID, then this field ~~will be~~ is structured per the Vendor Specific element defined in 9.4.2.24 (Vendor Specific element)”

Action: as suggested.

P1145, L33,

“The mesh STA transmitting the MCCA Setup Request element is the MCCAOP owner of the MCCAOPs ~~that will be~~ scheduled with this reservation setup request.”

Action: as suggested.

P1226, L51,

“NOTE 8—A receiving STA in which dot11VHTExtendedNSSBWCapable is false ~~will~~ ignores the Extended NSS BW Support subfield and effectively evaluates this table only at the entries where Extended NSS BW Support is 0.”

Action: as suggested.

P1272, L10,

“ If it is equal to 1, the AP ~~will~~ transmits a Resource Allocation frame”

Action: as suggested.

P1279, L23,

“The (group) listen interval ~~will~~ starts from the first TBTT or TSBTT that follows the expiration of the AID switch counter obtained from the AID Switch Count field of this element”

Action: as suggested.

P1280, L37,

 “It is expected that during the association, STAs receive a nonzero group ID, which ~~will~~ restricts their activity to a particular sector interval or during omnidirectional time interval.”

Action: as suggested.

P1286, L34,

“then the TWT requesting STA or TWT scheduled STA ~~will~~ rejects the TWT setup.”

Action: as suggested.

P1292, L11,

“the TWT SP(s) corresponding to the TWT flow identifier(s) of the TWT element ~~will be~~ are protected by”

\*Side note: line 44 has wrong sized text on this page

Action: as suggested.

P1293. L2,

“The Min Sleep Duration field in the NDP Paging Request indicates in units of SIFS the minimum duration ~~that STA will be in the~~ of the STA’s doze state after receiving an NDP Paging frame with a matching P-ID.”

Action: as suggested.

P1301, L57,

“The Extended Supported S1G-MCS and NSS Set field not being present ~~will~~ conveys that neither S1G-MCS 11 nor S1G-MCS 12 are supported.”

Action: as suggested.

P1321, L51,

 “The Header Compression element is used by a STA to inform its intended receiver ~~regarding~~ the frame header fields ~~that will~~ to be compressed and that it needs to store.”

Action: no change; resolve through comment resolution process.

P1391, L5,

 “and the new BSS color ~~that will~~ to take effect after the BSS color change”

[Robert: “that takes effect”]

Action: no change; resolve through comment resolution process.

P1488, L60,

“a query for that element ~~will~~ returns that element with all optional fields not present.”

Action: as suggested.

P1564, L62,

“The value 0 ~~will be~~ is returned by the STA when a Query Response is provided in this frame.”

Action: as suggested.

P2008, L40,

“MFB = 127, MFSI in the range 0 to 6: the responder is not ~~now~~ providing~~, and will never provide,~~ feedback for the request ~~that had the~~ with the MSI value that matches the MFSI value.”

Action: as suggested.

P2011, L3,

 “: the responder is not ~~now~~ providing~~, and will never provide,~~ feedback for the request ~~that had~~ with the MSI value that matches the MFSI value.”

Action: as suggested.

P2013, L46,

“the responder is not ~~now~~ providing~~, and will never provide,~~ feedback for the request ~~that had~~ with the MSI value that matches the MFSI value.”

Action: as suggested.

P2019, L12,

 “In general, bidirectional implicit beamforming ~~will~~ does not function as described here when the steering matrices have nonorthonormal columns.”

Action: as suggested.

P2265, L32.

 ““Demand TWT” indicates that the requesting STA ~~will~~ currently accepts only the indicated TWT parameters for a TWT agreement.”

Action: as suggested.

P2266, L20,

“The TWT response sent by the TWT responding STA containing the TWT Setup Command field of Accept TWT ~~will~~ indicates whether”

Action: as suggested.

P2266, L32,

““Demand TWT” indicates that the requesting STA ~~will~~ currently accepts only the indicated TWT parameters for a TWT agreement.”

Action: as suggested.

P2271, L25,

 “Examples of frames ~~that will~~ to solicit a Next TWT Info/Suspend Duration field include”

Action: delete “will”, i.e., reads: “…frames that solicit a…”

P2284, L1,

“At the end, STA B sends a PPDU with the Response Indication 2 (Normal Response) and STA A ~~will~~ terminates the BDT exchange by sending a PPDU with the Response Indication equal to 0 (No response)”

Action: as suggested.

P2294, L9,

“STAs receive a nonzero group ID, which ~~will~~ restricts their activity to a particular sector interval and omnidirectional time interval”

Action: as suggested.

P2350, L64,

“Similar considerations ~~will~~ apply for the Nontransmitted BSSID Profile subelement for BSSID M (not shown”

P2352, L9,

“This countdown value ~~will~~ allows a STA associated with an AP in the set to receive the announcement during the DTIM beacon”

Action: delete “will” (don’t insert “countdown value”).

P2352, L36,

“which ~~will~~ results in a different BSSID in the set taking over the role of the transmitted BSSID.”

Action: as suggested.

P2353, L25,

“Indication of buffered group addressed frames for each BSSID belonging to the multiple BSSID set (as described in 9.4.2.5 (TIM element)) ~~will~~ follows the newly assigned multiple BSSID index values updated according to this subclause”

Action: as suggested.

P2353, L29,

“then an iaf of 6 ~~will~~ converts the BSSID 8c-fd-0f-7f-1e”

Action: as suggested.

P2365, L10,

“IBSS: At least one STA ~~will be~~ is awake to respond to (#3751)Probe Request frames”

Action: as suggested.

P2381, L61,

“AID 0 (zero) is reserved to indicate the presence of buffered non-GCR-SP group addressed BUs ~~that will~~ to be delivered using MPDUs with an RA other than a SYNRA but that are not delivered using group AID.”

Action: as suggested.

P2382, L13,

“After a DTIM, the AP shall transmit buffered nonGCR-SP group addressed BUs ~~that will~~ to be delivered using MPDUs with an RA other than a SYNRA, before transmitting any individually addressed frames.”

Action: as suggested.

P2386, L9,

“The non-AP STA may transmit multiple ADDTS Request frames to the AP where the last received ADDTS Request frame ~~will~~ overrides any previously received ADDTS Request frame.”

Action: as suggested.

P2388, L9,

“ the presence of further buffered non-GCR-SP group addressed BUs ~~that will~~ to be delivered using MPDUs with an RA other than a SYNRA”

Action: as suggested.

P2388, L11,

“to transmit all of the buffered non-GCR-SP group addressed BUs ~~that will~~ to be delivered using MPDUs with an RA other than a SYNRA”

Action: as suggested.

P2388, L18,

“, until all buffered non-GCR-SP group addressed BUs ~~that will~~ to be delivered using MPDUs with an RA other than a SYNRA have been transmitted”

Action: as suggested.

P2388, L21,

 “the AP shall retransmit all nonGCR-SP group addressed BUs ~~that will~~ to be delivered using MPDUs with an RA other than a SYNRA”

Action: as suggested.

P2395, L54,

“(this transmission ~~will be~~ is preceded by the transmission of a Peer Traffic Indication frame and the subsequent receipt of a trigger frame that starts a service period)”

Action: as suggested.

P2397, L23,

“More than one FMSID may have the same delivery interval and therefore ~~will~~ share the same FMS counter.”

Action: as suggested.

P2400, L5,

” The AP ~~will~~ terminates the use of FMS transmission rules for any FMS stream identified by FMSID.”

Action: as suggested.

P2427, 56, “NOTE 2—The net effect of the above is that any GLK non-AP STA in PS mode will, for all traffic for which the PS STA is a recipient, result in MPDUs that are buffered and, if there are multiple receivers, potentially duplicated.”

\*\*The ‘will’ should be removed, but the sentence doesn’t make sense even with ‘will’ in it, so I’m not sure how to fix it.

Action: no change.

P2458, L36,

“The delay bound ~~that will be~~ provided by the HC in the TSPEC response is”

Action: as suggested.

P2501, L26,

“The duration over which the measurement was made ~~will be~~ is included in the measurement duration field of the measurement report.”

Action: as suggested.

P2543, L3,

“The New Channel Number field of the Extended Channel Switch Announcement element represents the new channel (when the BSS after relocation/width change ~~will be~~ is a 20 MHz BSS) or the primary channel of the new pair of channels (when the BSS after relocation/width change ~~will be~~ is a 20/40 MHz BSS).”

Action: as suggested.

P2596, L45,

“The AP selects TXVECTOR parameters ~~that will be~~ used for transmission to the currently associated STAs”

Action: change “that will be” to “to be”

P2645, L1,

“Authentication ~~will~~ then occurs between the non-AP STA and the SSP through a protected tunnel. ”

Action: as suggested.

P2650, L1,

“The same value of hash ~~will be~~ is computed by each AP in an ESS and by each AP in different ESSs”

Action: as suggested.

P2651, L23,

 “The AP’s SME causes the QoS mapping to be available to higher layer protocols or applications so they ~~will be able to~~ may set the correct priority in an MA-UNITDATA.request primitive.”

Action: change “will be able to” to “are able to”

P2651, L38,

 “Upon receiving the QoS Map element, the non-AP STA’s SME causes the QoS mapping to be available to higher layer protocols or applications so they ~~will be able to~~ may set the correct priority in an MA-UNITDATA.request primitive.”

Action: change “will be able to” to “are able to”

P2652, L49,

“Then determine the bit positions in the Bloom Filter Array field ~~that will~~ to be set to 1 for each service in the list.”

Action: as suggested.

P2658, L60,

“that the requesting QMF STA ~~will~~ uses for transmitting Management frames to the peer QMF STA”

Action: as suggested.

P2790, L59,

 “A PMKSA created as part of an RSNA ~~will~~ contains the MAC address used to create the PMKSA.”

Action: as suggested.

P2814, L57,

“at least one of which ~~will~~ represents an abscissa of a point on the curve.”

Action: as suggested.

P2818, L17,

“This ~~will~~ ensures PT is a generator of order either 1”

Action: as suggested.

P2821, L46,

“Use of other AKMs with the hash-to-element method(#344) ~~will~~ requires definition of the length of the PMK.”

Action: as suggested.

P2821, L51,

“(if only one sent a Rejected Groups element then the salt ~~will~~ shall consist of that list)”

Action: change “will consist” to “consists”

P2869, L61,

“In the initial 4-way handshake this third message (and the fourth message sent in response) ~~will be~~ is unprotected and in a rekeying 4-way handshake the third (and the fourth) message ~~will be~~ is (are) protected with the old key.”

Action: change “will be” to “are” (2x)

P2878, L26,

“NOTE 3—~~The~~ A STA ~~will not be~~ is not sent any protected individually addressed robust Management frames. ~~The~~ A STA might be sent a protected group addressed robust Management frame by a peer STA that has negotiated management frame protection for links with other STA”

Action: change “will not be” to “is not” (don’t change article).

P2878, L49,

“NOTE 6— ~~The~~ A STA ~~will not be~~ is not sent any protected individually addressed robust Management frames before ~~the~~ a PTKSA has been established.”

Action: as suggested.

P2948, L24,

“After exchanging Authentication frames, the STA and AP derive a shared and secret key ~~that will be~~ used to derive a set of secret keys”

Action: as suggested.

P3084, L44,

“~~there will not be~~ a loop is not formed”

Action: as suggested.

P3097, L60,

“the mesh STA shall adjust its TSF timer so that the next TBTT ~~will be~~ is delayed for the duration of the”

Action: as suggested.

P3097, L61,

“Otherwise, it shall adjust its TSF timer so that the next TBTT ~~will be~~ is delayed for the duration of”

Action: as suggested.

P3217, L1,

“—A Class 2 ERP STA ~~will not be~~ is not able to operate in a BSS”

Action: as suggested.

P3231, L29,

“—A Class 2 HT STA ~~will not be~~ is not able to operate in a BSS whose AP includes in the basic rate/HT-MCS set”

Action: as suggested.

P3449, L7,

 “The number of pad bits added ~~will always be~~ is 0 to 7 per user”

Action: as suggested.

P3451, L50,

 “In the case that rate 5/6 coding is selected, the puncturing scheme ~~will be~~ is the same as described in”

Action: as suggested.

P3463, L12,

“~~will be~~ are transmitted on two data tones that are separated by”

Action: as suggested.

P3500, L57, “the maximum A-MPDU length will be limited by the Maximum A-MPDU Length Exponent”

Should be “the maximum A-MPDU length ~~will be~~ is limited by the Maximum A-MPDU Length Exponent”

Action: as suggested.

P3633, L63,

“the bits ~~will be~~ are input serially”

Action: as suggested.

P3654, L44,

 “which ~~will~~ corresponds to a single column V matrix having elements with equal magnitude”

Action: as suggested.

P3682, L17,

” CCA levels ~~will~~ impact system behavior and performance increasingly with loading,”

Action: as suggested.

P3832, L18,

“the STA ~~will~~ does not respond”

Action: as suggested.

P3908, L53

 “The responding STA ~~will~~ does not create any new individual TWT agreement with the requester at this time.”

Action: as suggested.

P3909, l60,

“The unsolicited TWT response with TWT Setup Command field of Accept TWT ~~will~~ may indicate new TWT parameters that are different from the previously negotiated TWT parameters for that TWT agreement.”\*\*should this be ‘may’ or ‘does’?

Action: change “will indicate” to “indicates”

P3948, L38,

“then multiple STAs identified by STA-IDs in the parameter STA\_ID ~~will~~ use the same resource unit”

Action: as suggested.

P3957, L45,

 “: the responder ~~will~~ does not provide feedback for the request that had the MSI value”

Action: as suggested.

P3980, L15,

“if it does not expect additional (not yet associated) STAs ~~will~~ need to discover the BSS.”

Action: change “expect additional (not yet associated) STAs will need to discover the BSS” to “expect that additional (not yet associated) STAs need to discover the BSS”

P4128, L18,

“The number of pre-FEC pad bits added by the MAC ~~will always be~~ is a multiple of 8.”

Action: as suggested.

P4128, L20,

“The number of pre-FEC pad bits added by the PHY ~~will always be~~ is 0 to 7.”

Action: as suggested.

P4129, L28,

“When rate 5/6 coding is selected, the puncturing scheme ~~will be~~ is the same as described”

Action: as suggested.

P4132, L25,

” The number of pre-FEC pad bits added by PHY ~~will always be~~ is 0 to 7.”

Action: as suggested.

P4938, L52,

 “When true, this attribute indicates a STA that ~~will~~ does not accept associations from or peer with a non-GLK capable STA. When false, it indicates a STA that ~~will~~ does peer with or accept associations from a non-GLK capable STA.”

Action: as suggested.

P4939, L12, “"When true, this attribute indicates a STA that ~~will~~ only associates, direct links, or peers with a STA supporting EPD. When false, it indicates a STA that ~~will~~ associates, direct links, or peers with a STA that does not support EPD.”

Action: as suggested.

P5000, L52,

“The Burst Interframe(#1460) interval value is set to 0 to indicate that frames ~~will be~~ are transmitted with no target interframe(#1460) delay.”

Action: as suggested.

P5001, L1,

 “If the Tracking Duration value is a nonzero value the STA ~~will~~ sends Location Track Notification frames, based on the Normal and In-Motion Report Interval field values, until the duration ends. If the Tracking Duration is 0 the STA ~~will~~ continuously sends Location Track Notification frames”

Action: as suggested.

P5125, L16 missing word “B4 indicates that the STA will be disassociated from the ESS.”

Action: as suggested (missing work added, will remains).

P5185, L26,

“"When SAE authentication is the selected AKM suite, this table is used to locate the binary representation of a shared, secret, and potentially low-entropy word, phrase, code, or key ~~that will~~ to be used as the authentication credential between a TA/RA pair”

Action: as suggested.

P5187, L22,

 “More preferred Group Identifiers ~~will~~ have a lower index in the Group Entry.”

Action: as suggested.

P5402, L14,

“A6 was previously used for street names in IETF RFC 5139 [B46], it ~~will not be~~ is no longer used, the RD element ~~will be~~ is used for thoroughfare data. However, without additional information these fields ~~will not be~~ are not interchanged when converting between different civic formats. Where Civic address information is obtained from another format, such as the DHCP form IETF RFC 4776 [B44], the A6 element ~~will be~~ is copied directly from the source format.”

Action: as suggested.

P5692, L60,

“The value used in an HCCA TSPEC might be different~~, as will now be explained~~.”

Action: as suggested.

P5707, L9,

 “A NULL virtualBitMap ~~will~~ still adds a single octet of 0”

Action: as suggested.

P5712, L37,

“unless the GLK STA ~~will~~ joins only BSSs limited to EPD STAs.”

Action: as suggested.

P5712, L59,

“there ~~will be~~ are two sequential length fields or,”

Action: as suggested.

P5741, L63,

“The use of DSCP Exception fields ~~will~~ maps a DSCP to a UP.”

Action: as suggested.

P5741, L64,

 “Mapping by range ~~will~~ requires the setting of DSCP ranges”

Action: as suggested.

P5746, L60,

 “The AP ~~will~~ uses this information for authorization requests from the STA”

Action: as suggested.

P5750, L45,

 “Using this type of association means the AP and non-AP STA ~~will~~

 exchange unprotected frames”

Action: as suggested.

P5799, L1,

“This ~~will~~ ensures that STAs associated with that profile are able to receive the update.”

Action: as suggested.

**“Must”**

P1260, L16,

“The assignment of the cache identifier is outside the scope of the standard but its value ~~must be~~ is unique per Authenticator”

Action: resolve through comment resolution process.

P1325, L44,

“The requested vendor specific information sequence ~~must~~ starts with an Organization Identifier field”

Action: as suggested.

P1512, L23,

“The Validation subfield indicates the minimum type of credential validation ~~that must occur~~ for the credentials to be deemed valid.”

Action: as suggested.

P1866, L52,

 “The MSDU in the MA-UNITDATA.request.primitive ~~must~~ shall start with the octets specified in the LLC Header Copy field.”

Action: no change; use comment resolution process.

P2351, L13,

“including Vendor Specific element carrying “Content (1)” which ~~must~~ shall be replicated in order to still apply to BSSID N”

Action: no change; use comment resolution process.

P2510, L40,

 “The STA requesting a Beacon report ~~must~~ supports Reported Frame Body subelement (de)fragmentation”

**Or** this text must be changed from a NOTE to normative text: “The STA requesting a Beacon report ~~must~~ shall support Reported Frame Body subelement (de)fragmentation”

Action: no change; use comment resolution process.

P4980, L6,

” dot11DSEEnablementFailHoldTime indicates the number of seconds that a dependent STA ~~must~~ shall not transmit in a DSE frequency band”

Action: no change; use comment resolution process.

P5293, L1,

“during which the STA ~~must~~ shall transmit at least one DMG STA Directional Transmit Activity Report frame”

Action: no change; use comment resolution process.

**“May not” should not be used.**

P382, L40,

“when the primitives may ~~not~~ be unclear from the descriptions in those clauses.”

[Robert: I think the use of “may” here is inappropriate since we are taking about the spect content.]

Action: Change to “when the primitives might not be clear from the descriptions in those clauses”

P2361, L16,

“STA A may ~~or may not~~ be a member of a PBSS.”

[Robert: agree]

Action: as suggested.

P2625, L17,

” The receiving STA may ~~or may not~~ respond to the GAS Query Request.”

Action: as suggested.

P4570, L57,

“The WUR non-AP STA may ~~or may not~~ wake up to receive Beacon frame if the WUR non-AP STA is in PS mode”

Action: as suggested.

**“Only”** used as a constraint

Extras

Misc. NOTE related:

P580, L40 – NOTE has wrong font size.

P629 – NOTEs are not sequentially numbered

P687 – NOTE 2 should be NOTE.

P746 – “NOTE 2—Values for the Address Extension Mode subfield are defined in see Table 9-35”

Should be “NOTE 2—Values for the Address Extension Mode subfield are defined in ~~see~~ Table 9-35”

P1373, L19 – the note says “It is mandatory for …” – does that mean the text should not be a note?

[TGme Editor] Accept all proposed changes in this section.

#### Style Guide 2.8.1 – which/that

Joseph

Carol

(decide between yourself who does which section)

#### Style Guide 2.8.2 – articles

Check with Mark Rison

#### Style Guide 2.8.3 – missing nouns

Check with Mark Rison

#### Style Guide 2.8.4 – unnecessary nouns

Check with Mark Rison

#### Style Guide 2.8.5 – unicast and multicast

#### Roy Want

Unicast (11 occurrences: 7 changes proposed, 4 ok)

[TGme Editor P2] No change in this section. Some of words “unicast” and “multicast” in the identified locations are referred to upper layers (i.e. IP layer). In the IP layer, “unicast” and “multicast” are used, instead of “individually addressed” and “group addressed”.

Need further discussion for those items. Assigned to Emily to submit comments in SB.

#1 P208 L15: If the target matches the address of an associated non-AP STAs, the Proxy ARP service can either respond on behalf of the non-AP STA, or preferably send the frames as unicast transmissions to the target STA(s) only. -> If the target matches the address of an associated non-AP STAs, the Proxy ARP service can either respond on behalf of the non-AP STA, or preferably send the frames as ~~unicast~~ individually addressed transmissions to the target STA(s) only.

Action: as suggested.

[TGme Editor] No change.

#2 P2602 L13: If the target address is known, the Proxy ARP service can either respond directly on behalf of a STA or forward the request as a unicast frame to the intended STA. -> If the target address is known, the Proxy ARP service can either respond directly on behalf of a STA or forward the request as ~~a unicast~~ an individually addressed frame to the intended STA.

Action: as suggested.

[TGme Editor] No change.

#3 P2602 L17: Otherwise, forwarding as unicast is recommended, to avoid responding with misleading information. -> Otherwise, forwarding as ~~unicast~~ an individually addressed frame is recommended, to avoid responding with misleading information.

Action: as suggested.

[TGme Editor] No change.

#4 P2602 L20:

(#1208) For IPv4, when the address being resolved in the ARP request (IETF RFC 826) is used by a non-AP STA currently associated to the BSS, the proxy ARP service shall either respond on behalf of the STA to an ARP request or an ARP probe (IETF RFC 5227) or preferably turn the ARP request into a unicast frame sent to that STA. ->

(#1208) For IPv4, when the address being resolved in the ARP request (IETF RFC 826) is used by a non-AP STA currently associated to the BSS, the proxy ARP service shall either respond on behalf of the STA to an ARP request or an ARP probe (IETF RFC 5227) or preferably turn the ARP request into ~~a unicast~~ an individually addressed frame sent to that STA.

Action: as suggested.

[TGme Editor] No change.

#5 P2604 L2:

NS messages are sent as IP layer unicast for neighbor unreachability detection (NUD) (section 7 of IETF RFC 4861). ->

NS messages are sent as IP layer ~~unicast~~ individually addressed frames for neighbor unreachability detection (NUD) (section 7 of IETF RFC 4861).

Action: as suggested.

[TGme Editor] No change.

#6 P2604 L3:

The proxy ARP function shall not operate on IP layer unicast NS messages.->

The proxy ARP function shall not operate on IP layer ~~unicast~~ individually addressed NS messages.

Action: as suggested.

[TGme Editor] No change.

#7 P2604 L20:

Preferably, though, the Proxy ARP service should transmit the IP layer multicast NS message as a unicast frame to the STA and let the STA respond, as recommended in IETF RFC 8929.->

Preferably, though, the Proxy ARP service should transmit the IP layer ~~multicast~~ group addressed NS message as ~~a unicast~~ an individually addressed frame to the STA and let the STA respond, as recommended in IETF RFC 8929.

Action: as suggested.

[TGme Editor] No change.

#8 & #9 P5381 L23: (MIB Detail: OK – but duplicated?)

Dot11InterworkingEntry ::= SEQUENCE { dot11NonAPStationMacAddress MacAddress, dot11NonAPStationUserIdentity DisplayString, dot11NonAPStationInterworkingCapability BITS, dot11NonAPStationAssociatedSSID OCTET STRING, dot11NonAPStationUnicastCipherSuite OCTET STRING, dot11NonAPStationUnicastCipherSuite OCTET STRING,

[Emily to review]

[Emily]: no change to a MIB variable

[TGme Editor] No change.

#10 P5383 L14: (Appendix C: MIB Detail: OK)

dot11NonAPStationUnicastCipherSuite OBJECT-TYPE

Action: no change

[TGme Editor] No change.

#11 P5746 L13: (Appendix R: Interworking with external networks: OK)

The following is used: — dot11NonAPStationUnicastCipherSuite

Action: no change

[TGme Editor] No change.

Multicast (383 occurrences: 3 changes proposed, 380 OK)

#1 P280 L14:

(#1208) The Proxy ARP service enables an AP to avoid forwarding to the BSS broadcast ARP frames for IPv4 (IETF RFC 826) and IP layer multicast packets IPv6 ND messages for IPv6 (IETF RFC 4861 and IETF RFC 4862) which target not match the address of an associated STA. ->

(#1208) The Proxy ARP service enables an AP to avoid forwarding to the BSS broadcast ARP frames for IPv4 (IETF RFC 826) and IP layer ~~multicast~~ group addressed packets IPv6 ND messages for IPv6 (IETF RFC 4861 and IETF RFC 4862) which target not match the address of an associated STA.

Action: no change

[TGme Editor] No change.

#2 P602 L63: (?)

(#1208) IPv6 ND uses IP layer multicast Internet Control Message Protocol version 6 (ICMPv6) Neighbor Solicitation (NS) messages (section 4.3 of IETF RFC 4861) for address resolution (section 7.2 of IETF RFC 4861), which is the equivalent of ARP request, and for duplicate address detection (DAD). ->

(#1208) IPv6 ND uses IP layer ~~multicast~~ group addressed Internet Control Message Protocol version 6 (ICMPv6) Neighbor Solicitation (NS) messages (section 4.3 of IETF RFC 4861) for address resolution (section 7.2 of IETF RFC 4861), which is the equivalent of ARP request, and for duplicate address detection (DAD).

Action: no change

[TGme Editor] No change.

#3 P2604 L17:

(#1208)When the target IPv6 address of a IP layer multicast NS message corresponds to an associated STA, the Proxy ARP service may respond on behalf of an associated low-power STA with a neighbor advertisement (NA) message (section 4.4 of IETF RFC 4861) with the override flag set to zero, to conserve energy. ->

(#1208)When the target IPv6 address of a IP layer ~~multicast~~ group addressed NS message corresponds to an associated STA, the Proxy ARP service may respond on behalf of an associated low-power STA with a neighbor advertisement (NA) message (section 4.4 of IETF RFC 4861) with the override flag set to zero, to conserve energy.

Action: no change

[TGme Editor] No change.

Action on Emily: submit as comment during SA ballot

Action on Robert: Update style guide so that it is clear we are concerned only with MAC frames.

[TGme Editor P2] No change in this section. Emily to submit a comment in SB. Robert will update style guide so that it is clear we are concerned only with MAC frames.

### Style Guide 2.9 – Numbers

Brian Hart (will review what he can) – focus on LSB/MSB

Edward will do the rest

[01] 607.44: Given “0s”, “1s” and “2s”, **not** “zeros”, “ones” and “twos”, please replace “a sequence of zeros” with “a sequence of 0s”.

[02] 798.52: Replace “up to seven zeros are appended” with “up to seven 0s are appended”.

[03] 2819.33: Replace “a salt of all zeros” with “a salt of all 0s”.

[04] 3361.16: Replace “concatenating 504-LH zeros” with “concatenating 504-LH 0s”.

[05] 3362.45: Replace “The data are padded with zeros” with “The data are padded with 0s”.

[06] 3363.59: Replace “zeros” with “0s”.

[07] 3364.56: Replace “zeros” with “0s”.

[08] 3365.21: Replace “zeros” with “0s”.

[09] 3372.27: Replace “zeros” with “0s”.

[10] 3373.8: Replace “zeros” with “0s”.

[11] 3730.53: Replace “zeros” with “0s”.

[12] 3777.14: Replace “zeros” with “0s”.

[13] 3786.58: Replace “zeros” with “0s”.

[14] 3792.7: Replace “zeros” with “0s”.

[15] 3792.41: Replace “zeros” with “0s”.

[16] 5616.49: Replace “zeros” with “0s”.

[17] 5618.57: Replace “zeros” with “0s”.

[18] 5618.58: Replace “zeros” with “0s”.

[19] 5620.33: Replace “zeros” with “0s”.

[20] 5621.21: Replace “zeros” with “0s”.

[21] 5622.8: Replace “zeros” with “0s”.

[22] 5623.39: Replace “zeros” with “0s”.

[23] 5625.39: Replace “zeros” with “0s”.

[24] 4067.58: Replace dot with multiplication sign.

[25] 4069.2: Replace dot with multiplication sign.

[26] 4070.48: Replace dot with multiplication sign.

[27] 4085.39: Replace dot with multiplication sign.

[28] 4126.55: Replace dot with multiplication sign.

[29] 4128.2: Replace dot with multiplication sign.

[30] 4128.9: Replace dot with multiplication sign.

[31] 4128.24: Replace dot with multiplication sign.

[Robert: changes look ok to me]

Action: accept all changes

[TGme Editor P2] Accept all suggested changes in this section.

### Style Guide 2.10 – Maths operators and relations

Edward

[01] As per Section 2.10 of the IEEE 802.11 editorial guideline, “Any use of “up to and including” should be avoided”. How about “up to and excluding” in 225.11?

[Emily to review]

[02] 967.34: Please replace “up to and including” with an appropriate phrase.

[Emily to make suggestion]

[TGme Editor] no change in this section review. The rule in Section 2.10 is for Maths operators and relations. The cited sentences are not math operators/relations.

### Style Guide 2.11 – Hyphenation

Edward

[01] 1910.9: Replace “non-dynamic” with “nondynamic”.

[02] 1910.13: Replace “non-dynamic” with “nondynamic”.

[03] 1910.51: Replace “non-dynamic” with “nondynamic”.

[04] 1996.28: Replace “non-fragmentable” with “nonfragmentable”.

[05] 1997.47: Replace “non-fragmentable” with “nonfragmentable”.

[06] 1997.51: Replace “non-fragmentable” with “nonfragmentable”.

[07] 1997.53: Replace “non-fragmentable” with “nonfragmentable”.

[08] 1997.60: Replace “non-fragmentable” with “nonfragmentable”.

[09] 1997.62: Replace “non-fragmentable” with “nonfragmentable”.

[10] 1997.64: Replace “non-fragmentable” with “nonfragmentable”.

[11] 1998.30: Replace “non-fragmentable” with “nonfragmentable”.

[12] 1998.38: Replace “non-fragmentable” with “nonfragmentable”.

[13] 2241.62: Replace “non-beamforming” with “nonbeamforming”.

[14] 618.22: Replace “pre-correction” with “precorrection”.

[15] 3836.64: Replace “pre-correction” with “precorrection”.

[16] 3848.26: Replace “pre-association” with “preassociation”.

[17] 3849.25: Replace “Pre-association” with “Preassociation”.

[18] 4011.12: Replace “pre-correction” with “precorrection”.

[19] 4011.15: Replace “pre-correction” with “precorrection”.

[20] 4155.60: Replace “pre-correction” with “precorrection”.

[21] 4155.63: Replace “pre-corrections” with “precorrections”.

[22] 4155.64: Replace “pre-correction” with “precorrection”.

[23] 4156.2: Replace “pre-correction” with “precorrection”.

[24] 4156.4: Replace “pre-correction” with “precorrection”.

[25] 4156.7: Replace “pre-correction” with “precorrection”.

[26] 4157.5: Replace “pre-correction” with “precorrection”.

[27] 5554.12: Replace “re-unites” with “reunites”.

[28] 5583.35: Replace “re-unites” with “reunites”.

[29] 5595.18: Replace “re-unites” with “reunites”.

[30] 3929.63: Replace “(Re-)Association Request” with “(Re)Association Request”.

[31] 1487.1: Replace “Access network query protocol (ANQP) elements” with “Access network query protocol (ANQP)-elements”.

[32] 2914.48: Replace “implementation-specific” with “implementation specific”.

[33] 2952.54: Replace “implementation-specific” with “implementation specific”.

[34] 3862.44: Replace “implementation-specific” with “implementation specific”.

[35] 306.47: Replace “implementation-specific” with “implementation specific”.

[36] 998.63: Replace “implementation-specific” with “implementation specific”.

[37] 1230.37: Replace “implementation-specific” with “implementation specific”.

[38] 1396.28: Replace “implementation-specific” with “implementation specific”.

[39] 1991.4: Replace “implementation-specific” with “implementation specific”.

[40] Consider adding “timing-related” to the grandfather list.

[41] 3750.31: Replace “Time-related” with “Timing-related”.

[42] 3750.37: Replace “Time-related” with “Timing-related”.

[43] 360.5: Replace “MIB-related” with “MIB related”.

Action: as suggested for all.

[TGme Editor] Accept all suggested changes in this section.

### Style Guide 2.12 – References to SAP primitives

No volunteer

### Style Guide 2.13 – References to the contents of a field/subfield

Emily took a look at the new subclauses (added by 11ax, 11ay and 11ba). They seem okay.

### Style Guide 2.14 –MIB attributes

Mark Hamilton

### Style Guide 2.15 – Hanging Paragraphs

No volunteer

### Style Guide 2.16 – Abbreviations

Emily

No findings.

### Style Guide 2.17 – Format for code/pseudocode

No volunteer

### Style guide 3 – Style applicable to specific Clauses

#### Definitions (Clause 3)

Carol

P182, L19, beamforming has a defined acronym [BF]

P186, L14, delete (IBSS), not needed immediately before [IBSS]

P188, L50, missing ] after acronym

P189, L25, needs [noninfrastructure BSS] after :

P189, L44, should be “transmit beacons.”

P190, L26, should be “peer-to-peer (PTP) link: [PTP link] …”

P190, L31, should be “peer-to-peer (PTP) traffic specification (TSPEC):”

P192, L5, should be “receive (RX) chain: [RX chain]”

P192, L10, should be receive (RX) power: [RX power]”

P194, L49, should be “transmit (TX) chain: [TX chain]”

P213, L1, should be “group addressed quality-of-service (QOS) management frame: [GQMF}”

P220, L17, should be “nonextended rate physical layer (PHY): [non-ERP]”

P220, L 28, should be “non groupcast with retries service period (SP): [non-GCR-SP]”

P220, L40, should be “non-high-throughput: [non-HT]”

P222, L22, should be “non-spatial reuse group: [non-SRG]”

P226, L15, L18, L22, L27, L32, all need “(QOS)” added to the term being defined

P226, L60, should be “receive (RX) sector sweep: [RXSS]”

P234, L1, L5, L10 should be “transmit (TX)”

P237, L40, should be “uplink: [UL]”

P239, L1, should be “wake-up radio (WUR) duty cycle service period (SP):”

P192, L40, reassembly is out of order

P201, L52, L58, P202, 10, L15, the 2.16 entries are out of order, they belong after the 2MHz entries

P202, L26, L31, 42, L48, the 4.32 entries are out of order, they belong after the 4-way handshake entry

P202, L60, P203, L1, the 6.48 entries are out of order, they belong after the 6 GHz band entry

P203, L13, L17, the 8.64 entries are out of order, they belong after the 8 MHz entries

P207, L51, delivery-enabled access category is out of order, should be before delivery traffic indication map entries

P208, L1, direct sequence spread spectrum (DSSS) physical layer (PHY) protocol data unit is out of order should be after direct sequence spread spectrum (DSSS) complementary code keying entries

P224, L54, peer trigger frame is out of order, should be after peer-specific mesh power management mode

P226, L1, physical layer (PHY) protocol data unit (PPDU)[+SigExt] is out of order

P228, L10, sub 1 GHz (S1G) band is out of order

P228, L17, L22, secondary1 channel and secondary2 channel are out of order

P234, L37, trigger-enabled access category (AC) is out of order

P238, L31, very high throughput (VHT) single-user (SU) physical layer (PHY) protocol data unit (PPDU) should come after very high throughput (VHT) single-user-only entries

3.4

P240, L 32, A-PPDU is out of order

P241, L39, BIP is out of order

[TGme Editor] Accept all suggested changes in this section.

#### General Description (Clause 4)

No volunteer

#### Frame formats (Clause 9) – shall or may?

Emily

610.62: NOTE 2 describes the actions of a STA amd should not be included in clause 9.

1401.11, Delete “The EDMG Capabilities element contains a fixed length Core Capabilities field, which is followed by a variable length Optional Subelements fields.”.

1480.35, change “The Key Info field is 1 octet and is illustrated in” to “The format of the Key Info field is shown in”.

1480.53, change “The PN field is 6 octets and is illustrated in” to “The format of the PN field is shown in”.

The length of the field is already shown in the figure. No need to repeat in the text:

747.30, delete “The length of the Authentication Algorithm Number field is 2 octets.”

747.59,delete “The length of the Authentication Transaction Sequence Number field is 2 octets.”.

748.11, delete “The length of the Beacon Interval field is 2 octets”.

748.31, delete “The length of the Capability Information field is 2 octets.”

750.30, delete “TheLength of the Current AP Address field is 6 octets.”

750.51, delete “The length of the Listen Interval field is 2 octets.”

751.44, delete “The length of the Reason Code field is 2 octets.”

755.1, delete “The The length of the AID field is 2 octets.”

761.5, delete “The length of the Timestamp field is 8 octets”.

764.34, delete “The length of the Dialog Token field is 1 octet.”.

764.49, delete “The length of the Block Ack Parameter Set field is 2 octets.”

766.30, delete “The length of the Block Ack Timeout Value field is 2 octets.”.

765.49, delete “The length of the Originator Preferred MCS field is 2 octets.”

766.37, delete “The length of the DELBA Parameter Set field is 2 octets.”

766.37, delete “The length of the Measurement Pilot Interval field is 1 octet.”

769.14, delete “The length of the field is 1 octet.”

786.4, delete “The length of the Target Channel field is 1 octet.

786.18, delete “The length of the Operating Class field is 1 octet.”

864.1, delete “The Length subfield is 1 octet.”

[TGme Editor] Accept all suggested changes in this section.

#### SAP interfaces (Clause 6)

No volunteer

#### New top level clauses

No volunteer

#### Annex A – Bibliography

No volunteer

#### Annex B – PICS

Edward

[01] Please add the abbreviation WURM (Wake Up Radio (WUR) medium access control (MAC) features) to B.2.2.

[02] Please add the abbreviation WURP (Wake Up Radio (WUR) physical layer (PHY) features) to B.2.2.

[03] Please add the abbreviation TDD-M (Time division duplex (TDD) medium access control (MAC) features) to B.2.2.

[04] Please add the abbreviation EDMG-M (Enhanced direct multi-gigabit (EDMG) medium access control (MAC) features) to B.2.2.

[05] Please add the abbreviation EDMG-P (Enhanced direct multi-gigabit (EDMG) physical layer (PHY) features) to B.2.2.

[06] Please add the abbreviation HEM (High-efficiency (HE) medium access control (MAC) features) to B.2.2.

[07] Please add the abbreviation HEP (High-efficiency (HE) physical layer (PHY) features) to B.2.2.

[08] 4635.49: Replace “CFAVT.” with “CFAVT”, i.e., remove the fullstop.

[09] 4637.29: Prepend “\*” to CF2G4n6G because it is referenced by HEM12.2.

[10] 4637.31: Prepend “\*” to CF5Gn6G because it is referenced by HEM12.2.

[11] 4637.57: Prepend “\*” to CFPAD because it is referenced by others in B.4.32.

[12] 4638.49: Prepend “\*” to PC1.

[13] 4639.26: Replace “Random Backoff function” with “Random backoff function”.

[14] 4639.29: Replace “DCF Access procedure” with “DCF access procedure”.

[15] 4639.33: Replace “Random Backoff procedure” with “Random backoff procedure”.

[16] 4640.19: Add “PC4 Reserved” and “PC5 reserved”.

[17] 4641.50: Remove the underline from the reference subclause.

[18] 4643.50: PC2 is reserved. Why does PC15.2 need to reference it?

[19] 4645.28: Prepend “\*” to PC34.1.

[20] 4645.34: Prepend “\*” to PC34.1.2.1.

[21] 4645.46: Prepend “\*” to PC34.1.2.2.

[22] 4647.40: Remove the underline from the reference subclause.

[23] 4649.52: Replace “Resource Request Procedures” with “Resource request procedures”.

[24] 4649.56: Replace “Resource Request Procedures” with “Resource request procedures”.

[25] 4649.59: Replace “Resource Request Procedures” with “Resource request procedures”.

[26] 4650.15: Replace “SA Query Procedure” with “SA Query procedure”.

[27] 4650.37: Remove the underline from the reference subclause.

[28] 4651.8: Remove the underline from the reference subclause.

[29] 4651.41: Replace “Multi-band Discovery Assistance” with “Multi-band discovery assistance”.

[30] 4652.6: Prepend “\*” to PC45.

[31] 4652.6: Replace “Operating Channel Information Validation” with “Operating channel information validation”.

[32] 4652.45: Replace “OCI Element” with “OCI element”.

[33] 4655.37: Replace “Timing Advertisement frame” with “Timing Advertisement”.

[34] 4656.60: Remove “frame”. Note: from [34] to [82], I suggested to remove “frame” because the phrase “frame” was not present most of the “legacy” PICS items in FT. The phrase “frame” was added to mainly the 11ba-related PICs.

[35] 4657.6: Remove “frame”.

[36] 4657.13: Remove “frame”.

[37] 4657.19: Remove “frame”.

[38] 4657.26: Remove “frame”.

[39] 4657.32: Remove “frame”.

[40] 4657.38: Remove “frame”.

[41] 4658.40: Remove “frame”.

[42] 4658.46: Remove “frame”.

[43] 4658.53: Remove “frame”.

[44] 4658.59: Remove “frame”.

[45] 4659.6: Remove “frame”.

[46] 4659.13: Remove “frame”.

[47] 4659.19: Remove “frame”.

[48] 4659.25: Remove “frame”.

[49] 4659.32: Remove “frame”.

[50] 4659.38: Remove “frame”.

[51] 4659.45: Remove “frame”.

[52] 4659.51: Replace “Header compression frame” with “Header Compression frame”.

[53] 4659.56: Remove “frame”.

[54] 4660.6: Remove “frame”.

[55] 4660.11: Remove “frame”.

[56] 4660.15: Remove “frame”.

[57] 4660.17: Remove “frame”.

[58] 4660.19: Remove “frame”.

[59] 4660.23: Remove “frame”.

[60] 4660.28: Remove “frame”.

[61] 4660.33: Remove “frame”.

[62] 4660.39: Remove “frame”.

[63] 4661.16: Remove “frame”.

[64] 4661.21: Remove “frame”.

[65] 4661.27: Remove “frame”.

[66] 4661.32: Remove “frame”.

[67] 4662.12: Remove “frame”.

[68] 4662.17: Remove “frame”.

[69] 4662.24: Remove “frame”.

[70] 4662.28: Remove “frame”.

[71] 4662.33: Remove “frame”.

[72] 4662.40: Remove “frame”.

[73] 4662.44: Remove “frame”.

[74] 4662.51: Remove “frame”.

[75] 4662.57: Remove “frame”.

[76] 4663.13: Remove “frame”.

[77] 4663.28: Remove “frame”.

[78] 4663.34: Remove “frame”.

[79] 4663.40: Remove “frame”.

[80] 4663.45: Remove “frame”.

[81] 4663.51: Remove “frame”.

[82] 4663.56: Remove “frame”.

[83] 4684.5: Remove “\*” from DS5.6 since it is not referenced by any other PICS item.

[84] 4685.60: Replace “Energy Only” with “Energy only”.

[85] 4693.36: Replace “Timing related” with “Timing-related”.

[86] 4720.37: ERP4 says “Support of ERP3 required PPDU formats as described in reference” but ERP3 is reserved!

[87] 4729.32: Add “OC5.1” to the item.

[88] 4729.41: Add “OC6.1” to the item.

[89] 4730.6: Add “OC7.1” to the item.

[90] 4732.44: Remove “\*” from QB4.2 since it is reserved.

[91] 4733.28: Remove the underline from the reference subclause.

[92] 4637.42: For CFCDMG, it is cross-referenced itself. It does not make sense.

[93] 4637.46: For CFCMMG, it is cross-referenced itself. It does not make sense.

[94] 4638.6: For CFEDMG, it is cross-referenced itself. It does not make sense.

Action: For 92, 93 and 94 make the changes through comment process.

[95] 4638.23: Remove the “\*” because CFWUR2G4 is not cross referenced by others.

[96] 4638.30: Remove the “\*” because CFWUR5G is not cross referenced by others.

[97] 4641.48: Remove “PC11.10”.

[98] 4643.55: Remove the “\*” because PC15.4 is not cross referenced by others.

[99] 4650.28: Prepend “\*” to PC39.

[100] 4667.27: Prepend “\*” to FT46.2.

[101] 4667.27: Prepend “\*” to FT47.11.

[102] 4656.60: Prepend “\*” to FT45.

[103] 4657.51: Prepend “\*” to FT46.

[104] 4658.39: Prepend “\*” to FT47.

[105] 4662.6: Prepend “\*” to FT52.

[106] 4664.48: Prepend “\*” to FR10.

[107] 4667.15: Prepend “\*” to FR46.

[108] 4676.31: Prepend “\*” to AD12.

[109] 4676.38: Prepend “\*” to AD13.

[110] 4676.44: Prepend “\*” to AD14.

[111] 4677.6: Prepend “\*” to AD15.

[112] 4734.20: Prepend “\*” to QD6.

[113] 4735.12: Prepend “\*” to QP2.

[114] 4736.10: Replace “Radio Measurement Capability” with “Radio measurement capability”.

[115] 4736.38: Remove the underline from the reference subclause.

[116] 4745.24: Remove the “\*” because DSE1 is not cross referenced by others.

[117] 4753.18: Prepend “\*” to HTM11.

[118] 4752.6: Prepend “\*” to HTM4.4.

[119] 4753.22: Remove the “\*” because HTM10 is not cross referenced by others.

[120] 4753.53: Replace “HTM13.1:O” with “HTM12.1:O”. There is no such PICS item HTM13.1.

[121] 4753.58: Replace “HTM13.3:M” with “HTM12.3:M”. There is no such PICS item HTM13.3.

[122] 4754.6: Replace “HTM13.2:O” with “HTM12.2:O”. There is no such PICS item HTM13.2.

[123] 4754.12: Replace “HTM13.4:M” with “HTM12.4:M”. There is no such PICS item HTM13.4.

[124] 4754.17: Replace “HTM13.1:O” with “HTM12.1:O”.

[125] 4754.22: Replace “HTM13.5:M” with “HTM12.5:M”. There is no such PICS item HTM13.5.

[126] 4754.26: Replace “HTM13.2:O” with “HTM12.2:O”.

[127] 4754.29: Replace “HTM13.6:O.1” with “HTM12.6:O.1”. There is no such PICS item HTM13.6.

[128] 4754.35: Replace “HTM13.6:O.1” with “HTM12.6:O.1”. There is no such PICS item HTM13.6.

[129] 4754.42: Replace “HTM13.6:O.1” with “HTM12.6:O.1”. There is no such PICS item HTM13.6.

[130] 4754.50: Replace “HTM13:O” with “HTM12:O”. Calibration procedure is not related to HTM13.

[131] 4755.24: Prepend “\*” to HTM15.

[132] 4768.16: Replace “HTM14.7:M” with “HTM12.7:M”. There is no such PICS item HTM14.7.

[133] 4755.47: Replace “HTM17.2:M” with “HTM16.2:M”. There is no such PICS item HTM17.2.

[134] 4755.53: Replace “HTM17.1:M” with “HTM16.1:M”. There is no such PICS item HTM17.1.

[135] 4755.57: Remove the underline from the reference subclause.

[136] 4756.14: Remove the underline from the reference subclause.

[137] 4778.47: Prepend “\*” to WNM17.

[138] 4780.12: Replace “WNM21:M” with “WNM22:M”. Calibration procedure is not related to WNM21.

[139] 4780.18: Replace “WNM21:M” with “WNM22:M”. Calibration procedure is not related to WNM21.

[140] 4780.6: Prepend “\*” to WNM22.

[141] 4780.23: Prepend “\*” to WNM23.

[142] 4781.10: Prepend “\*” to IW1.

[143] 4781.32: Prepend “\*” to IW2.

[144] 4781.49: Prepend “\*” to IW2.2.2.

[145] 4783.34: Prepend “\*” to IW2.21.

[146] 4784.27: Prepend “\*” to IW3.

[147] 4785.6: Prepend “\*” to IW4.

[148] 4787.64: Replace “MCCAOP Advertisement” with “MCCAOP advertisement”.

[149] 4788.7: Replace “Neighbor MCCAOP Recognition” with “Neighbor MCCAOP recognition”.

[150] 4788.12: Replace “MCCAOP Setup” with “MCCAOP setup”.

[151] 4733.26: Prepend “\*” to QB5.

[152] 4794.6: Prepend “\*” to AVT4.

[153] 4794.20: Prepend “\*” to AVT5.

[154] 4794.27: Prepend “\*” to AVT5.1.

[155] 4794.30: Prepend “\*” to AVT5.2.

[156] 4794.46: Prepend “\*” to AVT5.3.

[157] 4798.60: Replace “Transmission of Request” with “Transmission of request”.

[158] 4799.5: Replace “Reception of Request” with “Reception of request”.

[159] 4799.12: Replace “Transmission of Response” with “Transmission of response”.

[160] 4799.18: Replace “Reception of Response” with “Reception of response”.

[161] 4799.31: Remove the underline from the reference subclause.

[162] 4799.48: Remove the underline from the reference subclause.

[163] 4800.10: Remove the underline from the reference subclause.

[164] 4801.6: Replace “Random Backoff function” with “Random backoff function”.

[165] 4801.11: Replace “DCF Access procedure” with “DCF access procedure”.

[166] 4801.19: Replace “Random Backoff procedure” with “Random backoff procedure”.

[167] 4803.9: Remove the underline from the reference subclause.

[168] 4803.24: Remove the underline from the reference subclause.

[169] 4806.10: Remove the underline from the reference subclause.

[170] 4806.32: Remove the underline from the reference subclause.

[171] 4810.33: Replace “DMG BSS Peer and Service Discovery” with “DMG BSS peer and service discovery”.

[172] 4810.51: Replace “DMG Coexistence with” with “DMG coexistence with”.

[173] 4811.11: Replace “Power Save Configuration” with “Power save configuration”.

[174] 4811.24: Replace “Information Request/Response” with “Information Request/Response frame”.

[175] 4813.20: Add “The DMG low-power SC mode is obsolete. Support for this mechanism might be removed in a later revision of the standard.”

[176] 4828.8: Replace “BSS Operation” with “BSS operation”.

[177] 4835.55: Add “FILS 3.2  *Reserved*”.

[178] 4856.25: Prepend “\*” to RL1.

[179] 4856.28: Prepend “\*” to RL2.

[180] 4856.28: Replace “S1G relay Support” with “S1G relay support”.

[181] 4856.36: Replace “(RL2)” with “RL2”.

[182] 4856.40: Prepend “\*” to RL6.

[183] 4859.42: Prepend “\*” to CDMG-P2.1.

[184] 4859.44: Prepend “\*” to CDMG-P2.2.

[185] 4859.47: Prepend “\*” to CDMG-P2.3.

[186] 4861.8: Prepend “\*” to CMMG-P2.1.

[187] 4861.12: Prepend “\*” to CMMG-P2.2.

[188] 4861.16: Prepend “\*” to CMMG-P2.3.

[189] 4862.32: Replace “Service Information Response” with “Service information response”.

[190] 4864.56: Replace “CFHEM6.1” with “HEM6.1”.

[191] 4864.59: Replace “CFHEM6.2” with “HEM6.2”.

[192] 4865.64: Prepend “\*” to HEM11.1.

[193] 4866.12: Prepend “\*” to HEM11.2.

[194] 4877.6 and 4877.12: There are two “EDMG-M8.3” with different protocol capabilities. Please fix it.

[195] 4881.16: Replace “Support of one spatial streams” with “Support of one spatial stream”.

[196] 4883.8: Replace “?” with \pi.

[197] 4883.11: Replace “?” with \pi.

[198] 4890.6: Replace “WUR PN Update procedure” with “WUR PN update procedure”.

[199] 4890.18: Replace “WUR Discovery” with “WUR discovery”.

Action: Change as suggested except for 18, 92, 93 and 94 which we will do through comment process.

[TGme Editor P2] Change as suggested except for 18, 92, 93 and 94 which we will do through comment process.

#### Annex G – Frame exchange sequences

No volunteer – Robert to fix style guide

## ANA

Check for correct use of numbers against database.

Check names against database (update database if names have changed).

Robert Stacey

|  |  |  |
| --- | --- | --- |
| **Resource** | **Reference** | **Notes** |
| AKM suite selectors | 9.4.2.23.3 | OK |
| Authentication algorithm numbers | 9.4.1.1 | Value 1 should be released. Draft is OK. |
| Behavior limits | E.1 | No longer applicable. |
| Capabilities | 9.4.1.4 | Values 2, 3, 4, 6, 14, 15 should be released. Draft is OK. |
| Categories | 9.4.1.11 | Value 33 allocated but not used in draft. Was a TGay allocation. |
| Cypher suites | 9.4.2.23.2 | OK |
| Protocol Version | 9.2.4.1.2 | OK |
| Frame types | 9.2.4.1.3 | OK |
| Control subtypes | 9.2.4.1.3 | Value 15 should be released. Draft is OK. |
| Data subtypes | 9.2.4.1.3 | OK |
| Management subtypes | 9.2.4.1.3 | OK |
| Extended subtypes | 9.2.4.1.3 | OK |
| Extended Control values | 9.2.4.1.3 | Rename value 7 to “Grant Ack”. Rename value 0 to “Sector Ack”. Rename value 1 to “Block Ack Schdule”. Allocate value 11 as “TDD Beamforming”. |
| Element IDs | 9.4.2.1 | Values 17-31 should be released. Value 77 should be released. Draft OK. |
| Element ID Extension 1 | 9.4.2.1 | Value 0 should be released. Draft OK. |
| RSNXE | 9.4.2.240 | OK |
| RSNE | 9.4.2.23.4 | OK |
| Extended Capabilities | 9.4.2.25 | Value 76 is reserved in draft but allocated (TGaq) in database. Otherwise OK. |
| FT sublement IDs | Table 9-219 | Rename value 1 to “PMK-R1”. Remame value 3 to “PMK-R0”. Allocate: 5 = OCI, 6 = BIGTK, 7 = WIGTK. |
| FILS Discovery Frame Control subfield | Figure 9-1127 | OK |
| ANQP Info ID | Table 9-412 | 280 was released but shown in draft as Network Authentication Type with Timestamp. 283, 284, 285 conflict with TGbc. 286 without allocation. |
| Public Action frames | 9.6.7.1 | Values 35-38 rename: DCT -> DCS. Otherwise OK. |
| Reason codes | 9.4.1.7 | Value 69 is TIME\_SYNC\_LOST in draft, but reserved in database (previous TGak allocation). Value 70 in database is TIME\_SYNC\_LOST. Otherwise OK. |
| Status codes | 9.4.1.9 | Value 48 should be released. Some names missing in database. Otherwise OK. |
| PV1 frame types | 9.8.3.1 | OK |
| PV1 Control frame subtypes | 9.8.4.1 | OK |
| PV1 Management frame subtypes | 9.8.5.1 | OK |
| Subelement neighbor report | 9.4.2.35 | OK |
| Spectrum management action frames | 9.6.2.1 | OK. Should be released from ANA control. |
| TLV encodings |  | Release 4, 5, and 6. (no reference in draft) |
| WNM notification type | 9.6.13.29 | OK |
| USA operating classes | Table E-1 | OK |
| Europe operating classes | Table E-2 | OK |
| Japan operating classes | Table E-3 | Release 2-7, 9-10, 12-16, 18-19, 21-24, 27-28, 35, 38, 40, 43, 45, 47-50, 52-55. Draft OK. |
| Global operating classes | Table E-4 | Release 61-63. Allocate 77. Release 112-114. |
| Dot11smt | C | OK |
| Dot11phy | C | OK |
| Dot11StationConfig | C | 189 dot11UnsolicitedBAActivated used without allocation. |
|  |  |  |

Actions:

Robert will allocation new numbers for the numbers in conflict for ANQP Info IDs. REVme editor will update draft with new numbers.

Robert will update the database for the remaining issues so that the database aligns with REVme.

[TGme Editor] Accept all suggested changes in this section. Note that those changes have already been incorporated in D3.1.

## MIB

Yongho Soek

### Detailed proposed changes

* MIB Detail

The compiled MIB is embedded as the following.

* Original MIB file



* Fixed MIB file after compilation



The following two error will be fixed by updating the revision dates before the publication.

* mibs/IEEE802dot11-MIB:34: [3] {revision-after-update} revision date after last update
* mibs/IEEE802dot11-MIB:52: [3] {revision-missing} revision for last update is missing

TGme editor refers the following diff file to fix the MIB errors.



NOTE- I removed the followings.

< dot11CountersGroup6Subset1(12),

< dot11CountersGroup6Subset1(13),

< dot11CountersGroup6Subset1(14),

< dot11CountersGroup6Subset1(15),

< dot11CountersGroup6Subset1(12),

< dot11CountersGroup6Subset1(13),

< dot11CountersGroup6Subset1(14),

< dot11CountersGroup6Subset1(15),

Please refer the below error messages. Because I couldn’t understand the intention of the above definitions, I removed those redundant definitions for compiling.

mibs/IEEE802dot11-MIB:6853: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:6853: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:6853: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:6853: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:6853: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:6853: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:6853: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:6853: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:6853: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:6853: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:8609: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:8609: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:8609: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:8609: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:8609: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:8609: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:8609: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:8609: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:8609: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

mibs/IEEE802dot11-MIB:8609: [2] {enum-name-redefinition} redefinition of name `dot11CountersGroup6Subset1' in number enumeration

[Robert: The problem is that the name “dot11CountersGroup6Subset1” is being used for different values. The name needs to be unique. The CID tag in the draft references a comment that does not seem to pertain to the change. We might have to track down the origin of this change to determine the intent. The enum name does not seem to be referenced in the draft but the numbers (11, 12, …, 15) are referenced. The most appropriate change seems to be to to make the names unique. I would suggest: dot11CountersGroup6Subset1, dot11CountersGroup6Subset2, etc.]

[TGme Editor P2] at page 5019 and page 5053, change cited texts to:

< dot11CountersGroup6Subset1(12),

< dot11CountersGroup6Subset2(13),

< dot11CountersGroup6Subset3(14),

< dot11CountersGroup6Subset4(15),

# Collateral findings

# IEEE-SA MEC

|  |
| --- |
| Dear Robert Stacey:I have completed the pre-ballot review of Draft 3 of IEEE P802.11™, and I have made comments (below) that will help ensure your draft is ready for ballot.Section I comments shall be resolved before the ballot begins. The draft *cannot* be balloted or recirculated until these issues are resolved.Section II comments shall be resolved before the final recirculation. These issues have to be resolved, then reviewed by balloters.Please note that comprehensive formatting and editing (i.e., spelling, punctuation, grammar) will take place after the draft has been approved. This MEC addresses only issues that may stand in the way of IEEE SA Standards Board approval.Thank you for the opportunity to review this draft. If you have any queries about the comments in this MEC, please contact Michelle Turner via email (m.d.turner@ieee.org).Your OPM Program Manager, Christy Bahn will assist you with next steps**SECTION I: Shall be resolved before the ballot begins.****COPYRIGHT1****Permission letters for borrowed content2**Copyright permission letters for borrowed text (including definitions), tables, and figures shall be submitted to IEEE prior to the start of ballot. Submit all copyright permission letters to your OPM Program Manager.**SECTION II: Shall be resolved before the final recirculation.****TRADEMARKS or SERVICE MARKS3****ACTION:**References to commercial equipment or products in a standard shall be generic and shall not include trademarks or other proprietary designations.IEEE standards shall not include terms or conditions that are primarily contractual or commercial in nature, as opposed to technical or scientific in nature.I may have not identified all, however, please review to help ensure commercial terms/trademarks are not used in the draft to help ensure it is in compliance with the policy.1. Wi-Fi Alliance
2. Museum of Modern Art
3. Narita’s Hotspot

**REGISTRATION OBJECTS4**Drafts containing a registration of objects shall be submitted to the IEEE Registration Authority (IEEE RA) for mandatory coordination. The text containing the registration information should be highlighted in the draft, and the clause should be noted in the email to the IEEE RA.5**NORMATIVE REFERENCES and BIBLIOGRAPHY6** **Normative references**References listed in Clause 2 shall be cited in normative text within the document so that their role and relationship is understood by the user for implementation of the standard.Documents published by other organizations may be cited provided the document is publicly available at a reasonable cost and it includes the edition or date of publication. Normative references within the standard, are not permitted to contain commercial terms.8802.3-2018 is cited in the normative reference clause. There is a 2022 version, if the intent is to cite a specific part of the dated document do you want to use the 2022 version? Or if you want to user to refer to the latest edition only the date can be left off.**METRICATION**Standards submitted for approval should use metric units exclusively in the normative portions of the standard. Metric units shall be the primary unit of measurement where applicable. Inch-pound units may be included in parentheses after the metric units if the Standards Committee believes that the users of the document would benefit from the inclusion of inch-pound units, based on concerns for safety or clarity.9,10**GRAPHICS**Quality of line art and photos shall comply with minimum requirements for print reproduction.11Separate electronic files of figures shall be supplied (unless created in Microsoft® Word® or Adobe® Framemaker®). |

[Edward to review MEC ]

[01] As referred to subclause 5.1.4, it said “There are two LLC sublayer protocols used (see IEEE Std 802): LLC Protocol Discrimination (LPD) (see ISO/IEC 8802-2:1998) and (#2186)EtherType Protocol Discrimination (EPD) (see IEEE Std 802.3-2018). MSDUs are formatted in accordance with LPD or with EPD, as determined by the first condition below that is true. After a true condition has been found, subsequent conditions are ignored”. As per IEEE SA staff’s comment, can we replace “IEEE Std 802.3-2018” with “IEEE Std 802.3-2022”?

[02] As per Annex M.2, it said “If the DS uses LPD and the portal connects to a network that uses EPD, for example IEEE Std 802.3-2018, the integration function converts MSDUs exiting the DS from LPD to EPD format and those entering the DS from EPD to LPD”. As per IEEE SA staff’s comment, can we replace “IEEE Std 802.3-2018” with “IEEE Std 802.3-2022”?

Action on 1 and 2: submit as comments

[03] 175.38: Replace “IEEE Std 802.1AS™” with “IEEE Std 802.1AS™-2020”.

[04] 175.45: It seems that “IEEE Std 802.1Q™-2003, IEEE Standard for local and metropolitan area networks—Virtual Bridged Local Area Networks” is a duplicated (or outdated) one of “IEEE Std 802.1Q™, IEEE Standard for Local and Metropolitan Area Networks—Bridges and Bridged Networks”.

[05] 176.39: re “References listed in Clause 2 shall be cited in normative text within the document”, “IETF RFC 3490, Internationalizing Domain Names in Applications (IDNA), Mar. 2003” is not cited in normative text. It is cited in a NOTE only at 2763.8.

Action on 5: submit as comment

[06] 341.61: Replace “described in ISO/IEC Technical Report 11802-5:1997” with “described in ISO/IEC 11802-5:1997”.

Action on 3, 4 and 6: as suggested.

[TGme Editor P2] change as suggested for Item 3, 4, and 6. Edward will submit SB comments for 1,2, and 5.